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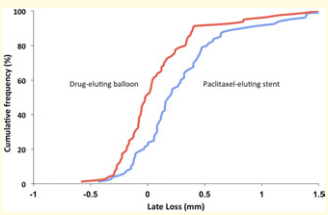
STATE-OF-THE-ART PAPER

CLINICAL RESEARCH



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INTERVENTIONAL CARDIOLOGY

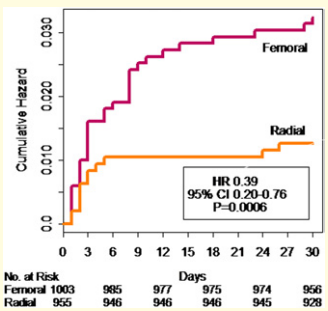
Improved Outcomes With Radial Access for STEACS 2481

Enrico Romagnoli, Giuseppe Biondi-Zoccai, Alessandro Sciahbasi, Luigi Politi, Stefano Rigattieri, Gianluca Pendenza, Francesco Summaria, Roberto Patrizi, Ambra Borghi, Cristian Di Russo, Claudio Moretti, Pierfrancesco Agostoni, Paolo Loschiavo, Ernesto Lioy, Imad Sheiban, Giuseppe Sangiorgi

The RIFLE trial compared outcomes in 1,000 ST-segment elevation acute coronary syndrome (STEACS) patients undergoing primary/rescue percutaneous coronary intervention. The primary endpoint was the 30-day rate of net adverse clinical event (NACE) (defined as composite of cardiac death, stroke, myocardial infarction, target lesion revascularization, and bleeding) was 14% in the radial arm and 21% in the femoral arm. Radial access was associated with significantly lower rates of cardiac mortality, bleeding, and shorter hospital stays. Radial access in patients with STEACS is associated with significant clinical benefits, in terms of both lower morbidity and cardiac mortality.

INTERVENTIONAL CARDIOLOGY

Effects of Radial Versus Femoral Artery Access in Patients With ACS With or Without STEMI 2490



Shamir R. Mehta, Sanjit S. Jolly, John Cairns, Kari Niemela, Sunil V. Rao, Asim N. Cheema, Philippe Gabriel Steg, Warren J. Cantor, Vladimír Džavík, Andrzej Budaj, Michael Rokoss, Vicent Valentin, Peggy Gao, Salim Yusuf

The RIVAL Trial randomized patients with ST-segment elevation myocardial infarction (STEMI) and non-ST-segment elevation acute coronary syndrome (NSTEACS) to radial or femoral access for their angiography. In STEMI patients, radial access reduced the primary outcome of death/MI/stroke/non-CABG-related major bleeding compared with femoral access (3.1% vs 5.2%). For NSTEACS, the rates were not different. In STEMI patients, death/MI/stroke was also reduced with radial access, as was all-cause mortality, with again no difference in NSTEACS patients. This trial confirms the benefits of radial access for STEMI patients, but no evidence that it benefits lower risk NSTEACS patients.

Editorial Comment: Olivier F. Bertrand, Tejas Patel, page 2500

HEART FAILURE

High Incidence of HF or CM After Trastuzumab Therapy for Breast Cancer 2504

Jersey Chen, Jessica B. Long, Arti Hurria, Cynthia Owusu, Richard M. Steingart, Cary P. Gross

Chen and colleagues used Medicare data to estimate heart failure (HF) and cardiomyopathy (CM) rates following chemotherapy and adjuvant trastuzumab in older women for breast cancer. Almost 50,000 women age 67 to 94 years with early-stage breast cancer were identified. Adjusted 3-year HF/CM incidence rates were higher for patients receiving trastuzumab (32 per 100 patients) and anthracycline plus trastuzumab (42 per 100 patients) compared with no adjuvant therapy (18 per 100 patients). These results show that at least one-third of elderly women.

Editorial Comment: Daniel J. Lenihan, page 2513

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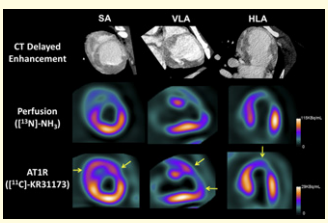
HEART RHYTHM DISORDERS

Crotti and colleagues have previously shown that depressed baroreflex sensitivity (BRS), a marker of reduced vagal reflexes, predicts the risk of symptoms in long QT syndrome (LQTS) type 1 (LQT1) patients. For this report, they assessed the utility of another marker of vagal refelxes, heart rate recovery after exercise. Data was obtained from LQTS genotype-positive patients who performed an exercise stress test. Despite similar maximal heart rate and workload, the symptomatic patients LQTS1 patients had a greater heart rate (HR) reduction in the first minute after exercise compared to the asymptomatic. There was no difference in HR recovery in LQT2 and LQT3 patients stratifed by symptoms. These results suggest that heart rate recovery after exercise may be useful for risk stratification in LQT1 patients.

Editorial Comment: Koonlawee Nademanee, page 2525

CARDIAC IMAGING



Fukushima and colleagues explored the feasibility of targeted imaging of the angiotensin II subtype 1 receptor (AT1R) in cardiac tissue using hybrid positron emission tomography/computed tomography (PET/CT) and a novel AT1R ligand. PET/CT was performed in healthy pigs and pigs 3 to 4 weeks after experimental myocardial infarction. In healthy pigs, AT1R expression was regionally homogeneous. After myocardial infarction, AT1R was upregulated in the infarct area relative to remote myocardium, and elevated in both regions compared to healthy hearts. First-in-man application was safe, and showed detectable and specific myocardial retention of the AT1R ligand. Noninvasive imaging of cardiac AT1R expression is feasible using PET/CT technology.

Editorial Comment: Thomas H. Schindler, Vasken Dilsizian, page 2535

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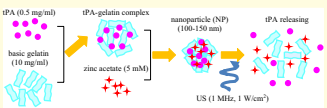
BIOMARKERS

deFilippi and colleagues **e**valuated the association between physical activity and serum levels of highly sensitive troponin T (cTnT) and amino-terminal B-type natriuretic peptide (NT-proBNP), along with the subsequent risk of heart failure (HF). Compared to participants with the lowest physical activity (on a scale of 1 to 7), those with the highest were only one-half as likely to have a significant rise in NT-proBNP and one-third as likely to have a rise in cTnT. A higher activity score was also associated with a lower long-term incidence of HF. These findings suggest that moderate physical activity has protective effects on early HF phenotypes.

Editorial Comment: Christopher M. O'Connor, Tariq Ahmad, page 2548

PRE-CLINICAL RESEARCH



Kawata and colleagues recently produced nanoparticles composed of tissue-type plasminogen activator (tPA), basic gelatin, and zinc ions. This formulation suppresses tPA activity by 50%, but full tPA activity can be restored with ultrasound (US) disruption of the particles. In a mouse arterial thrombosis model, the nanoparticles were confirmed to bind to von Willebrand factor (vWF), and preferentially accumulate at the site of thrombus. In a swine acute myocardial infarction (AMI) model, plasma tPA activity after intravenous injection of nanoparticles was about 25% of tPA prior to US application. During US application, plasma tPA activity near the affected coronary artery was higher than the femoral artery. This drug delivery system may improve intravenous coronary thrombolysis without increasing the risk of bleeding.

Editorial Comment: Tomoko Ichiki, John C. Burnett, Jr., page 2558